

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference FNTYA035WO | FOR FURTHER ACTION | | See Form PCT/PEA/416 |
| International application No. PCT/JP2004/015675 | International filing date (day/month/year) 15.10.2004 | Priority date (day/month/year) 10.11.2003 | |
| International Patent Classification (IPC) or national classification and IPC H01M8/02, H01M8/24 | | | |
| Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA | | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | | |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> | | | |
| Date of submission of the demand 04.11.2005 | | Date of completion of this report 23.12.2005 | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | | Authorized Officer Standaert, F Telephone No. +31 70 340-4608  | |

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/015675

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-68 as originally filed

Claims, Numbers

1-87 as originally filed

Drawings, Sheets

1/27-27/27 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|-------------|
| Novelty (N) | Yes: Claims | 1-35, 37-87 |
| | No: Claims | 36 |
| Inventive step (IS) | Yes: Claims | 1-35, 38-87 |
| | No: Claims | 36,37 |
| Industrial applicability (IA) | Yes: Claims | 1-87 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: EP-A-1 217 676 (DELPHI TECHNOLOGIES, INC) 26 June 2002
D2: HANDLEY C ET AL: "Impact of the European Union vehicle waste directive on end-of-life options for polymer electrolyte fuel cells" JOURNAL OF POWER SOURCES, ELSEVIER SEQUOIA S.A. LAUSANNE, CH, vol. 106, no. 1-2, 1 April 2002 (2002-04-01), pages 344-352, XP004348708 ISSN: 0378-7753

2. LACK OF NOVELTY

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 36** is not new in the sense of Article 33(2) PCT.

2.1 The document D2 discloses (the references in parentheses applying to this document):

A disassembly method of disassembling a fuel cell (line 3-5 of the abstract), which comprises: an electrode assembly that has an electrolyte interposed between a pair of electrodes; a pair of separators that are arranged across the electrode assembly, where one of the separators facing one of the electrodes has an oxidizing gas conduit, while the other of the separators facing the other of the electrodes has a fuel gas conduit; and a sealing member that is formed along periphery of the electrode assembly in a gap between the pair of separators (implicit, i.e. obvious features of a fuel cell), said disassembly method comprising the step of: applying an external force from outside of said fuel cell to an outer face of at least one of the separators or the gap between the pair of separators, so as to facilitate disassembly of said fuel cell (see page 348, left-hand column, line 15-16).

Therefore the subject-matter of claim 36 is not new.

- 2.2 Even if novelty of claim 36 would be argued based on minor differences between the features of said claims and those disclosed in document D2, the subject-matter of said claim would not involve an inventive step, Article 33(1) PCT, having regard to the disclosure of document D2 and the normal knowledge of a person skilled in the art of fuel cells. This is because document D2 clearly discloses that the bipolar plate does not need to remain undamaged during disassembly of the fuel cell.

3. LACK OF INVENTIVE STEP

Dependent **claim 37** does not contain any features which, in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of inventive step for the reason that the subject-matter of said claim represents merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.

4. NOVELTY AND INVENTIVE STEP

Claims 1-35 and 38-87 meet the requirements of the PCT with respect to novelty and inventive step.

- 4.1 The document D1 (see paragraphs [0003] to [0005] and Figure 4) is regarded as being the closest prior art to the subject-matter of claim 1, and shows all features of claim 1 except for the "breaking guide".

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as facilitating the disassembly of fuel cells.

The solution to this problem proposed in claim 1 of the present application is to equip the fuel cell with a "breaking guide" which is neither known from, nor rendered obvious by the available prior art. Therefore the subject-matter of claim 1 is considered to be inventive.

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(SEPARATE SHEET)**

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- 4.2 Claims 2-35 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
- 4.3 The same reasoning applies, *mutatis mutandis*, to the subject-matter of claims 38-87, which therefore is also considered to be new and inventive.